

“Concerning the Atrophy and Absence of Wisdom Teeth”

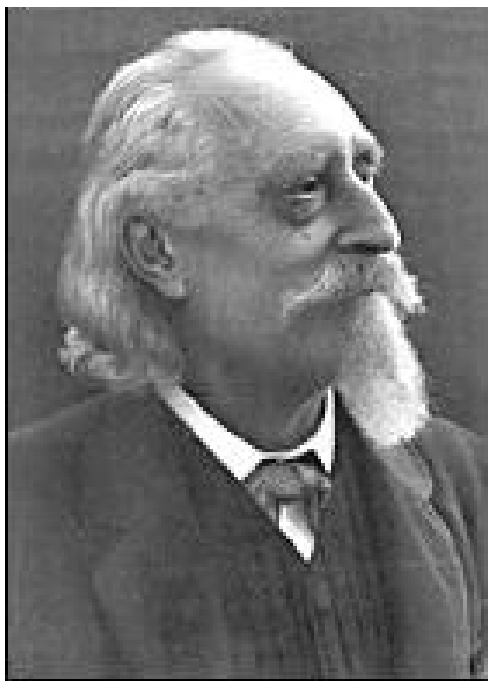
by Doctor Paolo Mantegazza

(Director, Museum of Anthropology and Ethnology, Florence, Italy)

ANTHROPOLOGY SOCIETY OF PARIS

Meeting of June 20, 1878

Robert K. Stevenson: Translator and Editor



Doctor Paolo Mantegazza

“Concerning the Atrophy and Absence of Wisdom Teeth”

In his book, *The Descent of Man*, Monsieur Charles Darwin expresses the opinion that the third molar unquestionably possesses the tendency to disappear; according to him, we shall witness over the millennia the progressive decline of this organ. He only devotes half a page to the development of this idea which, moreover, he presents as but a conjecture. He emphasizes the weaknesses and defects of this tooth, which is the last one to emerge but the first to perish, often develops cavities and is frequently missing.

The celebrated biologist, Richard Owen, asserts that among the inferior races this tooth has three roots, whereas only two such roots are found in the superior races.

Since Darwin, no one has highlighted this question. Even our colleague, Doctor Magitot, who in his *Anomalies du système dentaire* reveals so many new facts, places no special emphasis on this problem.

Additionally, Monsieur Lambert, in a pamphlet which justly treats the dental system from the viewpoint of Darwinian theory, completely neglects this matter.

I have attempted to shed light on this question by examining skulls belonging to the anthropology museum which I have established in Florence. As of now, this museum, which is very new, only contains 2500 skulls, and because old teeth fall out and disappear with great facility, I have only been able to utilize a thousand skulls.

I have divided them into three series:

1. Ancient skulls (Etruscans, Phoenicians and Romans); I do not have any prehistorics.
2. Modern skulls belonging to the totally inferior races (Negroes, Papuans, Australian aborigines, etc.).
3. Modern skulls of the superior races; these are mainly those of Italians.

The comparison of these three series confirms the conjecture of Darwin and contrariwise invalidates the opinion of Owen.

If one considers en bloc all the anomalies (absence, atrophy, and ectopy) pertaining to wisdom teeth, one finds that among the superior races they are the rule; with the inferior races, however, they only constitute the exception.

This law is verified even more so if, instead of considering all the anomalies en bloc, one specifically takes notice of the absence of the wisdom tooth.

With regard to the ancient races, they are not represented in my museum by skulls sufficiently old enough in order to provide very characteristic results. However, it appears that they act as a transition between the superior and inferior races.

If then the conjecture of Monsieur Darwin might appear audacious even today, it finds in my observations an argument in its favor.

I have observed, moreover, that the absence of wisdom teeth is often a hereditary phenomenon. For example, in the Romagnese, an extremely brachycephalic race in which very strong traces of Gallic blood have been bequeathed, the absence of the third molar is the rule. My series of skulls are not numerous enough in order for me to be able to research whether there is a connection between the absence of this tooth and brachycephalism.

As for the opinion of Monsieur Owen, my observations found it in error. Among Italians, in fact, the third molar frequently has three roots; several times I have discovered four, and on one occasion there were five. It is therefore not correct, as far as Italy is concerned, to say that the superior races have fewer roots to their wisdom teeth than the inferior races.

DISCUSSION

Doctor ÉMILE MAGITOT. Doctor Mantegazza, you raised two distinct questions in your presentation: one concerned the evolution of the lower wisdom tooth in human races; the other related to the number of its roots. Each of them yielded a certain observation.

In the first place it's important to know if, after having identified the absence of this tooth in an adult, you took the trouble to pry into the interior of the bone in order to learn if at least the embryo or follicle of this tooth was in place. I have personally conducted this research on many occasions, and always I have been able to discover the existence of this embryo whose development finds

itself impeded by conditions of compression. Therefore one cannot conclude from superficial examinations, without dissection, that this tooth is absent.

In my opinion, the presence of wisdom teeth in the adult is intimately linked to prognathism and brachycephalism. If the wisdom tooth is more frequently missing in the relatively orthognathous white races, this is owing to the insufficiency of space and to its resulting atrophy; but its existence at any rate seems to me unchanged.

Moreover, in considering the form itself of this particular tooth, it is not wise to put one's trust in appearances. Undoubtedly, at first sight the wisdom tooth seems only to show a single root; but if one inspects it more closely, one readily discovers that the law of multiple roots for molars is by no means violated here. The roots, in reality, normal in number, are merely soldered by a coalescence-like phenomenon. This is what has impelled the anatomists to say with reason that the roots of molars must be distinguished from both the anatomical and surgical point of view. Anatomically, the number of roots is fixed; surgically, this number may be reduced to one in the case of complete coalescence.

To sum up, I have to say that absolutely the lower wisdom tooth is never missing in any race. Its development and above all its eruption are just retarded or arrested in this latter case by reason of an energetic compression; further, although its embryo might completely atrophy, from an attentive examination one is always able to recognize its trace.

It is because of this conviction that, in my *Traité des anomalies du système dentaire*, which you alluded to, Doctor Mantegazza, I did not take up this question of the disappearance of the lower wisdom tooth in the elevated races, as this disappearance was in contradiction with the facts that I have pointed out and also with the general laws of evolution of the dentition in man.

Doctor PAOLO MANTEGAZZA. I anticipated your two concerns, Doctor Magitot, and have addressed them in my formal treatise on this subject.

Every time that the third molar was found missing in the skull's upper jawbone, I trepanned the maxilla in order to see whether or not the follicle existed; and, I noted the result in my findings. It is because it is impossible to conduct such research upon live subjects that I was limited to the study of skulls.

Finally, I have taken pains to clearly indicate in my findings the coalescence of roots, and their more or less complete fusion.

Doctor PAUL BROCA (*The Secretary-General of the Anthropology Society of Paris*). The conclusions of your remarkable talk, Doctor Mantegazza, conform to those that my own observations provided; my findings are consigned in my registers, but I have not yet synthesized them into statistical form. Nevertheless, the impression that they left on me strengthens my belief that Monsieur Darwin had good reason to regard the wisdom tooth as an organ in decline among men.

It often turns out, as you stated, Doctor Magitot, that in situations where this tooth appears totally absent it merely rests enclosed in its socket. But this fact itself is proof of decline.

Also, this tooth often develops, though out of position; in this instance it frequently gives rise to pathological cases, causing suffering and injury. But, what is by far the most common physiological occurrence in our race is that the wisdom tooth does not develop at all.

In this case, by trepanning the bone one often finds a hollow spot which denotes the location of the tooth's follicle. This state of atrophy of the embryo of the wisdom tooth is quite commonplace; perhaps it accounts for all the cases reported of this tooth's absence. It is true that many times I have not found any hollow area which might be concealing the dental follicle, but this is maybe because the arrested development occurred at a time when the embryo was extremely small.

You informed us, Doctor Mantegazza, that the wisdom tooth is frequently missing among the people of Romagna, who you describe as belonging to the Gallic race. This tooth is generally missing as well in the French Alpine race, and notably in the population of Lozère. Till now I have only conducted my research on upper jaws; this study will be able to be pursued on the unmatched lower jawbones that are arriving to us in number from Lozère.

With regard to the study of the wisdom tooth's size and the number of its roots, this is possible to carry out even upon jaws whose teeth have fallen out; it suffices in this case to make a mold of the tooth's socket. It was in this manner that I verified the existence of a wisdom tooth possessing five roots on the famous lower jawbone discovered at Naulette in 1866.

Doctor ÉMILE MAGITOT. However much I have maintained that the lower wisdom tooth is constantly present, whether in a state of complete development or under the aspect of its embryo being more or less atrophied, in my opinion the development of this tooth is dependent on the evolution of other teeth, and in

particular on the preceding molar (second molar). This opinion results, in fact, from a massive amount of embryogenic research I have conducted which I shall not venture to detail here.¹ Briefly, though, there is a follicular cordon of the second molar that detaches itself during the earliest moments of life, the prolongation of which presides over the development of the wisdom tooth. Now, the genesis of this tooth manifests itself in an unvarying manner. In the upper jaw, where no case of compression or atrophy occurs, the wisdom tooth develops normally. In the lower jaw conditions are quite different, and it is in the lack of sufficient space and in the resulting compression that one must seek the explanation for the highly frequent and serious mishaps which accompany its emergence. Furthermore, it is at this point in time with regard to this tooth's eruption that a veritable struggle takes place: where the force of development is superior the tooth effectuates its emergence with or without incident; where the resistance of the neighboring parts is too strong the follicle submits to atrophy. This latter is therefore also the most favorable outcome, because quite often it is not atrophy that occurs, but rather an unexpected organic transformation of the follicle, leading to grave consequences. But, I repeat, I do not believe in the complete disappearance of the wisdom tooth's embryo, as one can always find its trace in its normal location. All the troubles befalling the lower wisdom tooth invoked by Doctor Mantegazza seem to me then, as I have stated, to be related to brachycephalism and prognathism. Here the wisdom tooth is affected by phenomena which are positively foreign to it.

As my colleagues well know, I quite often emphasize the relevancy of the dental system's anomalies as they pertain to the different races. I have also attempted in my book to consider this question in its entirety, but for now what I'll share with you is only a mere sample. As a result of my observations, it appears to me that the diverse anomalies are not less frequent in today's races than in the prehistoric and inferior races. Along these lines, an anomaly just the opposite from that which you discussed, Doctor Mantegazza, a **numerical increase of the molars**, I have observed on several occasions in contemporary skulls. The **ascending volume** of the molars from the first to the third, which is an ever-present reality among the apes, can likewise be noted with a certain frequency in men today; I have collected examples of such and clearly cite them, if you please, as cases of **reversive anomalies**. The **bifidity of the root of the lower canine**, propounded not long ago as a characteristic of inferiority, is still met with in a large number of instances in our present-day races, and I have assembled many examples of such from living individuals. How can it therefore not be admitted

¹ See in this regard the report: Ch. Legros and É. Magitot, *Origine et formation du follicule dentaire chez les mammifères* (*Journal d'anatomie* de Ch. Robin, 1873).

that these same dispositions discovered in the skulls of inferior or prehistoric races simply represent an accidental anomaly?

Besides, it must be said, relevant data and findings are presently too small in number to warrant conclusions which will be necessarily premature until the day arrives when a mass of records will allow for the construction according to races of comparative statistics.

Monsieur ABEL HOVELACQUE. Doctor Mantegazza, you lumped together all the inferior races. However, there exist differences between each of them. For example, I compared the teeth of the Negroes of Guinea to those of Australian aborigines; what I found is that they appreciably differ with regard to the relative size of the molars. The Naulette cavern jawbone likewise provides this thesis a striking confirmation.

Professor EUGÈNE DALLY. I do not think, Doctor Mantegazza, your transformistic conclusion is in agreement with the nature of your work. The only conclusion that one might be able to confidently deduce is that the wisdom tooth is more often missing in the white races than in the black races. Doctor Broca's study of the skulls of the Lozèreans, among whom this tooth is frequently missing, demonstrates that a transformistic conclusion will in this respect prove to be quite flimsy.

Doctor PAOLO MANTEGAZZA. Monsieur Darwin expressed a conjecture which has heretofore only been supported by Monsieur Owen's inaccurate assertion. My work provides it a more solid argument, and establishes its significance; this ought not to be minimized nor exaggerated.

Madame CLÉMENCE ROYER. I believe it proper to remark that the ancient skulls that you examined, Doctor Mantegazza, are those of Italians, the same as the modern adults. It would be useful to learn if the modern Italians are superior to their ancient predecessors.

It would also be important, in a parallel study, to indicate the differences between the sexes and as much as possible the social classes.